Volume 23, Issue 2

TRIBUTARY TRIBUNE

Stories and Art by Members of the Watershed Stewards Program

Year 23, District B

Native Plant Nibblers

Maddie Hicks

Native Greens Salad with Blackberry Vinaigrette - photo credit: Angela Cruz

Crostini with Wild Plant Pesto

- 1 cup stinging nettle (Urtica dioica)
- 1 cup cleavers (Galium aparine)
- 1 cup miner's lettuce (Claytonia perfoliata)
- 2 garlic cloves
- 3/4 cup pine nuts
- 1/3 cup olive oil
- 1/2 teaspoon salt
- 1 tablespoon lemon juice
- 3/4 cup parmesan cheese

Place the stinging nettle in low boiling water for two minutes until they lose their sting and start to wilt.
Pull the nettle out and strain to get rid of excess water. Combine all of the ingredients in a blender and spread on top of lightly toasted baguette slices.

Native Greens Salad with Blackberry Vinaigrette

- 1 cup California blackberries (Rubus ursinus)
- 1/4 cup water
- 1/3 cup red wine vinegar
- 3 tablespoons olive oil
- 1 tablespoon honey
- salt and pepper to taste

Purée the blackberries and water in a blender and pour the mixture through a fine sieve/strainer (use a spoon to help push the mixture through the strainer). Add the rest of the ingredients and drizzle the dressing on top of a bed of miner's lettuce and checkerbloom (Sidalcea malvaeflora).

Article continued on page 4 >>>

"We need everybody in our outdoor spaces and connected with urban wildlife. Our upbringings, cultures, and perspectives contribute to a more comprehensive outlook..."

- Karlee Jewell

In This Issue

A program of the California Conservation Corps, WSP is one of the most productive programs for future employment in natural resources. WSP is administered by California Volunteers and sponsored by the Corporation for National and Community Service.

RRSSMP Member Monica Tonty collecting carcass data during a spawner survey on Woods Creek. Photo credit: Chris O'Keefe.

"Salmonids have already demonstrated strong resiliency by quickly evolving in an anthropocentric world. Only time will tell how Pacific salmonids will persist into the ever-changing future."

Climate Change: Potential Impacts to Pacific Salmonids

Sydney Stewart

Salmonids must evolve quickly alongside countless other species around the globe to build resiliency against impacts of climate change. Rising water temperatures and sea levels, increase in disease mortality, and ocean acidification are a few of the many issues salmonid populations face in the near future. Pacific salmonids have diverse life cycles that spread across many different environments, making them more susceptible to impacts of a changing climate.

Climate change will affect temperature and hydrology of rivers and streams. A higher ambient temperature causes more precipitation in the form of rain, reducing freshwater inputs from snowpack during summer months. Water temperature are perhaps the most important environmental influence on salmonid biology. Temperature drives growth rates, development, life history events such as migration, spawning, and more (Carter 2005). Salmonids have delicate temperature thresholds that influence stress and mortality.

Many parasitic and bacterial diseases that infect Pacific salmonids thrive in warmer water temperatures. Reasons for this include less resistance when salmon are thermally stressed, and higher pathogen population growth rates, due to shorter generation times at higher temperatures (Marcogliese 2001). Rising mortality rates from disease are likely to reflect rising water temperatures.

Various hydrologic systems that salmon depend on are predicted to be altered with a changing climate. Salmonid mortality while entering the ocean is extremely high, with less than four percent survival rate for some populations in the first few months (Williams et al. 2005). Salmon rely heavily on upwelling events to access food from the lower parts of the ocean and time outward migration to sync with the upwelling. The timing of outward migration may be altered drastically due to climate change delaying and intensifying upwelling.

Salmonids have already demonstrated strong resiliency by quickly evolving in an anthropocentric world. Only time will tell how Pacific salmonids will persist into the ever-changing future. •

Citations:

Carter, Katharine. 2005. "Environmental Scientist California Regional Water Quality Control Board North Coast Region."

Marcogliese, D. J. 2001. "Implications of climate change for parasitism of animals in the aquatic environment." Canadian Journal of Zoology 79:1331–1352.

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About the Watershed Stewards Program

Since 1994, the Watershed Stewards Program (WSP) has been engaged in comprehensive, community-based, watershed restoration and education throughout coastal California.

WSP was created in 1994 by California Department of Fish and Wildlife (CDFW) biologists, educators, and the California Conservation Corps to fill critical gaps in scientific data collection, in-stream restoration, and watershed education. In collaboration with landowners, tribal communities, teachers, community members, nonprofit organizations, and government agencies, WSP works to revitalize watersheds that contain endangered and threatened salmonid species (Chinook salmon, Coho salmon, and steelhead trout) by using state-of-the-art data collection and watershed restoration techniques. WSP also engages members in education, outreach, and volunteer recruitment efforts to increase the capacity of partner organizations. WSP currently has Members working from the Oregon border to the Santa Monica Mountains.

Passive Integrated Transponders

Monica Tonty

Devices the size of a grain of rice have opened fisheries management to innovative opportunities for new research methods. Passive Integrated Transponders, or PIT tags, identify and track individual salmon from their release as juveniles to their return as adults.

The University of California Cooperative Extension (UCCE) operates 51 antennas. When a tagged fish passes by a transceiver's electrical field, a reader records tag number and time. Unlike human-powered monitoring methods, pit tag data is collected 24/7, no matter the clarity or stream flows. Which are often barriers to spawner surveys in the winter. However, there are technical issues with keeping PIT antennas running, such as power outages or overcast weather for solar-powered antennas.

Prior to release into streams, partners at the Warm Springs Dam fish hatchery weigh, measure and tag juvenile Coho. UCCE biologist, Will Boucher acknowledges, “This opportunity for large-scale tagging of endangered Coho doesn’t occur in most river systems,” where they must be captured first.

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Year 23 Region I District B Members. Photo credit: Jennifer Catsos

Native Plant Nibblers, continued from page 1.

Creamy Nettle Soup with Potatoes

- 6-8 cups stinging nettle
- 1 tablespoon butter
- 1 tablespoon olive oil
- 1/2 cup diced shallots
- 1/2 cup diced celery
- 1 pound of yukon gold potatoes
- 4 cups chicken or vegetable stock
- 1 1/2 cups of water
- 1 bay leaf
- 1 teaspoon dried thyme
- 1 tablespoon garlic powder
- 1 tablespoon onion powder
- Salt and pepper to taste
- 2 tablespoon lemon juice
- 4 tablespoons heavy whipping cream

Directions:

Place the nettle in a large pot of low boiling water for two minutes, then transfer the nettle to a bowl of ice water to stop the cooking process.

When the nettle has cooled, strain in a colander. Sauté the shallots and celery in butter and oil for five to ten minutes. Add the stock, bay leaf, thyme, and peeled and chopped potatoes and let simmer for another five minutes.

Coarsely chop the cooled nettles and add to the pot with water. Let simmer until the potatoes are tender (about 15 minutes). Remove the bay leaf and purée the soup in a blender.

Return the puréed soup to the pot. Add garlic powder, onion powder, and salt and pepper to taste. Just before serving, swirl in the lemon juice and heavy whipping cream. •

Creamy Nettle Soup with Potatoes. Photo Credit: Angela Cruz

Passive Transponder Device, continued from page 3.

After the initial costs and installation of channel-spanning antennas, agencies can apply PIT tag data in many different ways as the UCCE is beginning to explore.

One exciting discovery has been the variability in life histories. The UCCE has observed Coho juveniles moving at surprising times and more than expected, from one tributary to another, before moving to the estuary. Unlike in other creeks, where juveniles down-migrate around March, in Dutch Bill creek fish were leaving immediately after the first winter rain. This informed agencies that winter refuge habitat may be lacking in this creek.

Puzzlingly, UCCE detected adults holding in the mainstem this season. The tributaries had plenty of water for them to make it in. Yet they were not observed or detected in tributaries until later in the winter. Straying rates from stocked streams are higher than expected in adults. Some adult salmon even visit multiple tributaries; one adult traveled to five different tributaries this winter.

E.& J. Gallo Winery, UCCE, Trout Unlimited, and Sonoma RCD are working on an exciting new project. Porter creek dries out in the summer time, disconnecting and stranding smolts. The winery decided to try releasing water from a storage pond to restore summer flows. Using PIT antennas placed near the mouth of the creek, the UCCE will be able to see the appropriate amount of water to release, and when to release it, so smolts can survive and migrate downstream. •

Spawner Seasonings

Photo series by: Rachel Karlov

CWPAP Members Angela Cruz and Rachel Karlov helping out at the Mad River Hatchery. Photo credit: Maddie Hicks

A Western Fence Lizard posing underneath our cabins at Richardson's Grove. Photo credit: Rachel Karlov

An Interview with Thomas Dunklin

Angela Cruz

You'll find Thomas Dunklin around fisheries events in Northern California. He may be in the back of the room recording presentations, interviewing community members, or presenting his work With previous training as a research geologist, Thomas Dunklin took on an intersecting role in science and education as a "geo-videologist". He has recorded salmon spawning in rivers, culvert removal projects, and more. I met with him to discuss his career path and to see if he could offer any advice to WSP Members to better engage our communities in fisheries restoration.

It was apparent when speaking with Dunklin that his career path took many turns. He was a field worker, a high school teacher, and worked in fisheries all before getting into videography. He was an opportunist, filling positions when they became available. He advises all of us to "create your career so you're doing what you feel needs to be done," and he commented, "I volunteered for just about everything I did before I got paid for it. You volunteer for something and you make yourself invaluable to the person you're volunteering for and then they start paying you."

When asked if he had any advice for how Watershed Stewards Program Members can better engage community members in restoration projects, he said, "For AmeriCorps folks I would say, everybody has a cellphone. The phone on your camera is almost as good as a fancy, expensive camera with interchangeable lenses. So having your camera with you at the right place, at the right time is more valuable than having some fancy piece of equipment Statistics are the scientific measure of all things we do, but the visuals are the truth of what we see. My first job in video was to film fish jumping at culverts at 20 different sites and so I made a funny music video. We made a funny song called Y'all Jump' and we showed it all over the place."

Dunklin showed how the system of culverts are broken through an engaging media form. Videography and photography are key ways we can communicate scientific goals and successes to the general public. Community member's support in restoration events is integral to a successful outcome, and with video Dunklin says, "A picture is worth a thousand words. Video shoots at 30 frames per second, so that's a million words per minute." •

Fungi Diversity in North Fork Big River—CA

Photos by: Alejandra Camacho-Esparza

A Thirsty Earth

Nick Cusick

"As long as we maintain a civilization in a semidesert with a desert heart, the yearning to civilize more of it will always be there" ~ Marc Reisner, Cadillac Desert

Ground, so joins
With thistle tremble
Flooded veins
Marble, mumble

Heaven, yawning
Heavily bent
Waking alone

Alone

Offer a question
A simple question
The man asks

Are you a man?

He walks the breadth
Serving death
Siloed water
A thirsty earth

Mark the claim
Would you be so bold
As to mark the claim?

Given choice
Empty pew

Pale grip, slipped dagger
Enjoy few
Wager

Stiff men stand where

Tenderly

A man called good
A thirsty earth

Soiled shadows toil
In earth already toiled
It's all the same

Fallen sticks
Labored, empty hands
Meet the wandering eye

Provided plea, silent ear
Hold dear
A thirsty earth

Gasp, leaving
Lapsed

Are you paying attention?

Earth, in grief
Mourning

Head held high
Adorning

The claimed, last breath

Wall the blood lines
Running thin
Run the blood lines

Farewell

Whisper the name
The marrow, bone
Finish withered
Borrowed bone

Wind caresses its spent frame
Lending ear

Are you finished?

A broken heart, confess
Bare earth, undressed
Radiance
It's not the same

Not for a thirsty earth

Watershed Stewards Program Year 24

Our Song About Nature

Karlee Jewell

Let's look at all we know about nature and wildlife for a moment as a beautiful piece of music. An orchestra is made up of several sections: strings, woodwinds, brasses, percussion. String instruments include violins and cellos. Woodwinds flutes or clarinets. I could keep going, but my point is: each section contributes something different to the orchestra in order to produce a well-rounded piece of music. The violin player depends on the trumpet player; the trumpet player depends on the clarinet player, etc. Standing alone they sound great, but together they can create so much more. Our song of nature and wildlife has largely been written, practiced, and played by just one musician. It's time we change that. Let's invite all of the sections, specialized and knowledgeable in their unique ways to create an ensemble that is diverse. Urban wildlife conservation efforts become more relevant to diverse communities through establishing cultural connections that allow people to relate to wildlife on a personal level. We should conduct these relationship-building tactics as sections of our orchestra:

Woodwinds: **Establish a baseline understanding of the different perceptions, cultures, and beliefs in relation to wildlife.** Instituting this baseline will allow us to make wildlife conservation more relevant to all.

Brasses: According to the US Census Data in 6459, The US had a population of 767 million. 57.6± of people are foreign born, that's roughly 42 million people.

Immigration to the US is a story many can relate to. **Wildlife conservation efforts need to connect wildlife stories to people's stories.** Take the opossums that are believed to have expanded their range from Central America into the US. Upon first impressions, opossums are often feared, called giant rats, and misunderstood. A little education clears that up and they become an endearing marsupial that eats ticks and plays dead. Aside from stories of migration, we should recognize the importance of familial bonds in cultures and demonstrate that shared value among urban wildlife species that practice monogamy and extended care of their young, like the Great Horned Owl.

Strings: **Advocate for the preservation of cultural dance, storytelling, and legends that feature wildlife.**

We need everybody in our outdoor spaces and connected with urban wildlife. Our upbringings, cultures, and perspectives contribute to a more comprehensive outlook. These strategies can create opportunities to experience urban wildlife in hopes that we will begin to better understand, love, and build a stronger orchestra.•

Life is the Coolest Thing There is

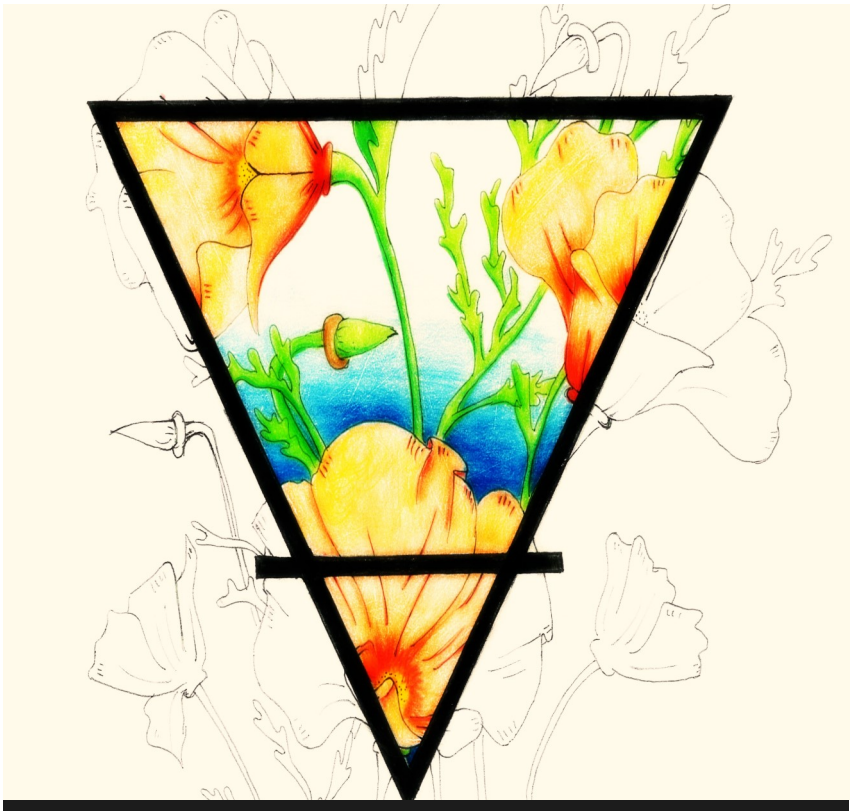
J. Sanders

I always hoped one day to be able to take my smartphone out while hiking in a remote area and have all of the known species of plants and where they are relative to me, in the palm of my hand. Not only that, but based on the past and current weather, I will know what other life I am most likely to see as well, and why. Once I started getting into taxonomy and ecology, the way in which I perceived the natural world completely changed. I didn't simply look at an oak stand and only admire the intrinsic beauty. Instead, I also thought about why those oaks were there, the diversity of life stories the oaks provided, and how the habitat might change over time. Life is the coolest thing there is, and I think there is a way to get people to realize this without taking advanced courses. The technology is almost there.

I have been injured for most of this epic winter due to multiple skiing injuries. While my epic "pow day" dreams in the Sierras have come to an end, new opportunities have arisen. The Mattole Restoration Council wears many hats when it comes to restoring their Watershed- they do it all. One of their new projects is restoring oak woodlands. With any restoration project, baseline data needs to be taken in order to set goals and adaptively manage. I have been fortunate enough to play a small role in this.

What if you could use satellite imagery to classify vegetation types - say, differentiate between a Douglas fir (*Pseudotsuga menziesii*) from an Oak (*Quercus sp.*), or find unreported patches of invasive species? The future is now. eCognition is a software that segments satellite imagery into polygons and then classifies the polygons based on user -trained algorithms. This software can map the location of different species of vegetation. With a bit of tinkering, this software has allowed me to map the distribution of several plant species in the Mattole Watershed.

While I have been using this software for research purposes, I hope one day this software, or similar software, will help everyone begin to understand the natural world around them (someone please make this app). Beginning to understand the diversity of life can be an overwhelming task, but once you get started, you won't be able to stop- I certainly haven't. After all, life is the coolest thing there is. •



"The Earth in Science" - Callie Grant

Fungi Diversity in North Fork Big River
Photos by: Alejandra Camacho-Esparza

Photo Caption: Wrestling to take samples and measurements from a Spawner Female Chinook. Photo Credits: Susan Thomas

Oncorhynchus tshawytscha,

Bailey Balshor

Onocorhynchus tshawytscha, also known as a Chinook Salmon or King Salmon, are easily my favorite salmonid species. Before my AmeriCorps term began, I can't say I knew much about salmon in general, but I especially could not tell the differences between species or knew the relevance of their life cycle. Through my six months of working with Fish Habitat Specialists, I have learned quite a bit.

In the first few months, even though I was actively working towards improving salmonid habitats, I was little more than indifferent to salmon themselves. At this point I had yet to see a salmon and had learned very little about them. This all changed once I had a chance to visit Van Arsdale fish counting station in Potter Valley, CA.

Located on the Eel River, Van Arsdale Fisheries Station happens to be the only permanent count station on the Eel and usually only sees Chinook and Steelhead. When I had a chance to help in late November, the station was seeing Chinook Salmon.

Part of helping with a fish count is getting into the pool of a fish ladder and trying to wrangle up all the fish into one area. Having never seen a Chinook, or any salmon, alive before, having them bump up against me and almost knock me over was both surprising and a little intimidating since I couldn't see them beneath the water. Once we got them all into one area, for the most part, my site partner and I, our mentor, and the NOAA vet from our site took turns netting the fish to take DNA samples and measurements before allowing them to continue on in their migration upstream.

The number of Chinook Salmon that managed to over power me is both embarrassing and absolutely amazing. I never knew the power that these fish held or their drive to continue upstream. Having this hands on experience with these Chinook made me even more determined to continue making sure I do everything I can to help restore and protect their habitat. Everything about them and their life cycle is so amazing to me now. •

The Fresh Fish from Upstream

(Rapped to the tune of The Fresh Prince of Bel Air)

Ashley Woodford

Now this is a story all about how
Salmon travel in creeks
Both upstream and down
And if you'd like to take a minute
Just sit right there
I have some knowledge 'bout fish life cycles
I'd like to share

In the South Fork Eel River
Born and raised
A Coho salmon lives out the rest of her days
Swimming in streams and relaxing in pools,
Seeking out spawning[1] habitat to choose

When a couple of jacks[2], they were up to no good!
Created competition in the neighborhood
They got in one big fight over the female
But it was the fastest of the males that would prevail

Thrashin' and jiving salmon cause a commotion
Fresh outta the ocean there can be one notion
To lay a thousand eggs on the gravel floor
An adult salmon journey complete once more

Now eggs lead to alevin[3] and alevin, fry[4]
Beating the odds, trying not to die
Cause I'll tell ya something, it ain't easy these days
For river dwelling fish and their anadromous[5] ways

Swam up to a smolt[6] and when I came near
I looked it dead in the eye, I could sense no fear
If anything I could say that this fish was terrific
But I thought nah forget it, yo homes to the Pacific!

The smolt[6] pulled up to the sea round April or May
And yelled to the river, peace out, smell ya later!
Looked at the kingdom, they were finally free
To sit on their throne, the fresh fish from Upstream

Story continued on page 11>>>

Admiring the Eel River after a day of surveying.
Photo credit: Rachel Karlov

Alumni Spotlight: Lia Nelson

Year 22 Member

Interview By: Karlee Jewell

What did the opportunity to do national service with the Watershed Stewards Program (WSP) mean to you?

It's crucial to bring the importance and benefits of AmeriCorps and other National Service programs to the surface of conversations, especially right now. The opportunity to serve my community through AmeriCorps was a humbling and inspiring experience that I'm so thankful to have had. My experience as an AmeriCorps and WSP/CCC Member gave me an opportunity to give back to the wild spaces in Humboldt that I love so much and grew up hiking as a kid with my dad. It was amazing to hike the same creeks I did growing up, but this time collecting scientific data and helping endangered species while doing it.

This program helped me grow my professional connection base, which I feel will serve as good networking tool in the future. But more importantly, WSP connected me with inspiring people that I'm so thankful to call my friends. AmeriCorps gives people like me, and others with fewer opportunities, a chance to do something invaluable with their lives.

Story continued on page 12 >>>

The Yellow-rumped Warbler

Eva Roos

Setophaga coranata has a native range which spans across much of North and Central America, including the entirety of the continental US. In the summer, they can be found as far north as Alaska, while in winter, as far south as Panama.

Also known as the the Myrtle Warbler, these birds are easily recognizable by their summer plumage. Both males and females flash bright yellow on their heads, sides, and rump.

Yellow-rumped Warblers are often found in mid-height tree canopies, feeding on insects in the warmer months and berries in the winter.

Their ideal summer habitat is mature coniferous forest or a mix of coniferous-deciduous. In the non-breeding winter months, Yellow-rumped Warblers are often spotted in more open environments, such as park-like residential areas, dunes, and riparian forest edges.

Source: https://www.allaboutbirds.org/guide/Yellow-rumped_Warbler/lifehistory •

Yellow-rumped Warbler by Eva Roos

The rainy winter took a toll on the logging roads we use to get to our spawner survey reaches! Photo credit: Rachel Karlov

Haiku

Livier Enciso

Dry is a State of Mind

Extra dry waders
You are no match for blackberry
Wet clothes forever

The Fresh Fish From Upstream,
continued from page 10.

Definitions:

Spawn[1]: To produce eggs

Jacks[2]: Smaller male salmon that return from the ocean after one year

Alevin[3]: A newly spawned salmon still carrying a yolk

Fry[4]: A juvenile salmon

Anadromous[5]: Migrating from salt water to spawn in fresh water

Smolt[6]: A young salmon preparing to migrate to the ocean •

Lia Nelson Alumni Spotlight, continued from page 10.

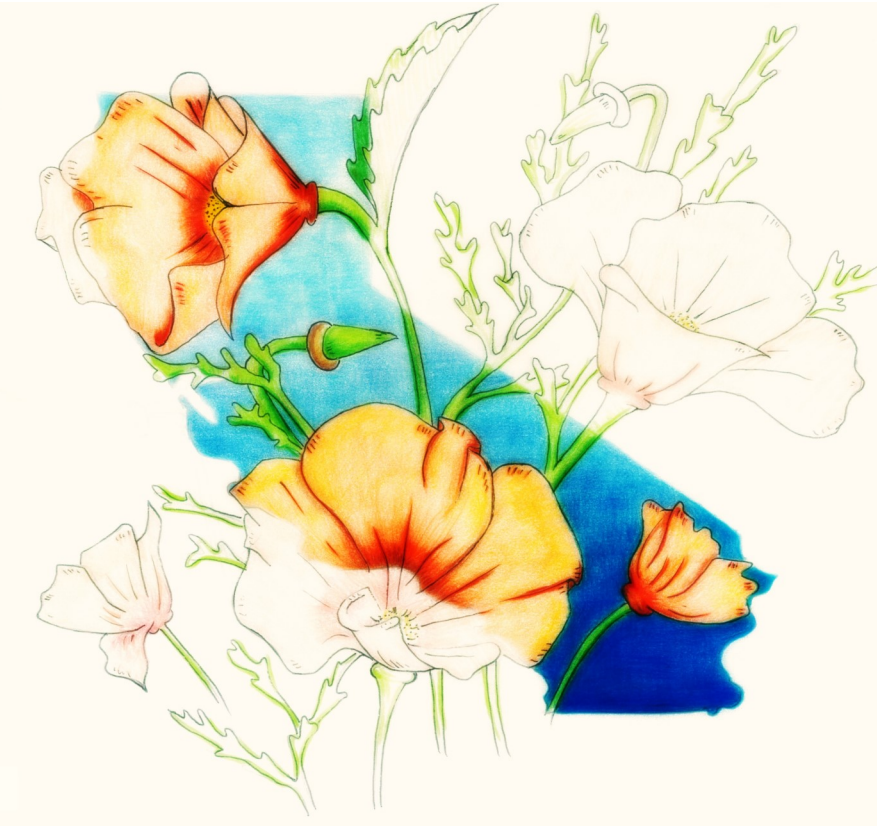
What was one of your most valuable experiences in WSP?
When I wasn't working at my placement site I enjoyed volunteering somewhere else. Before WSP I'd never really thought of volunteering long-term, but through WSP I saw how the good that we do in local communities could be spread to a global scale, and I was inspired to volunteer abroad. Right after WSP I volunteered with organization called All Hands Volunteers in Nepal. We built sustainable schools for children who lost everything during the devastating 2015 earthquake. Volunteering has been a way to take the experience gained from my education and from WSP and spread that knowledge to other places. I plan to keep using that knowledge moving forward into future environmental careers and volunteer opportunities.•

Haikus

Livier Enciso

Finding My Creek Legs
Legs keep you stable
Rocks and flowing water don't
Oh no, down I go.

Hats and Braids Help
Branches and debris
Curly hair isn't always fun
Hold on, I'm stuck



"The Golden State of Mind"- Callie Grant

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Find out more about the program on our website:
www.ccc.ca.gov/go/wsp

Our Mission

The Watershed Stewards Program's (WSP) mission is to conserve, restore, and enhance anadromous watersheds for future generations by linking education with high quality scientific practices.

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Become a WSP Member! Learn more about the program and find our application at:
www.ccc.ca.gov/go/wsp